09934374 081704

FIG.1

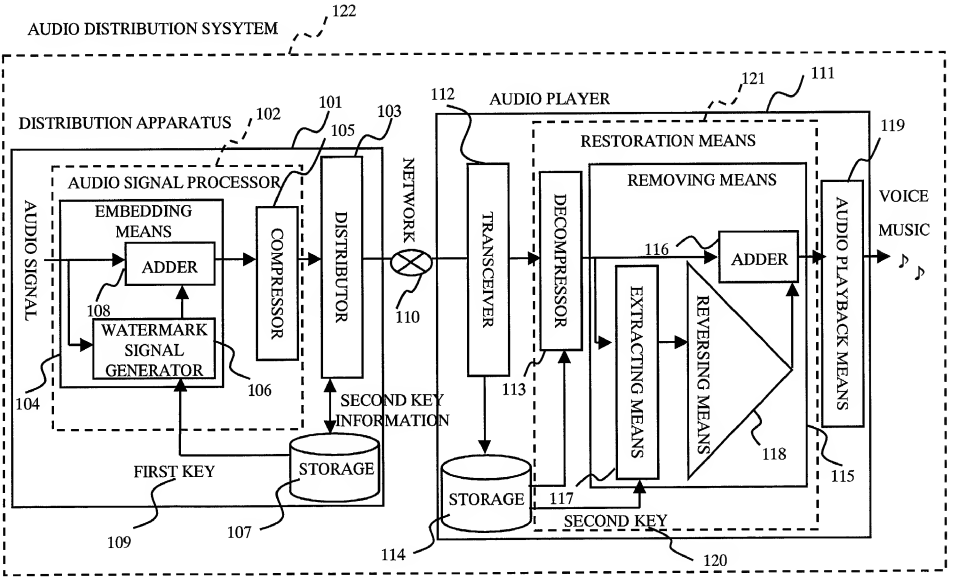


FIG.2

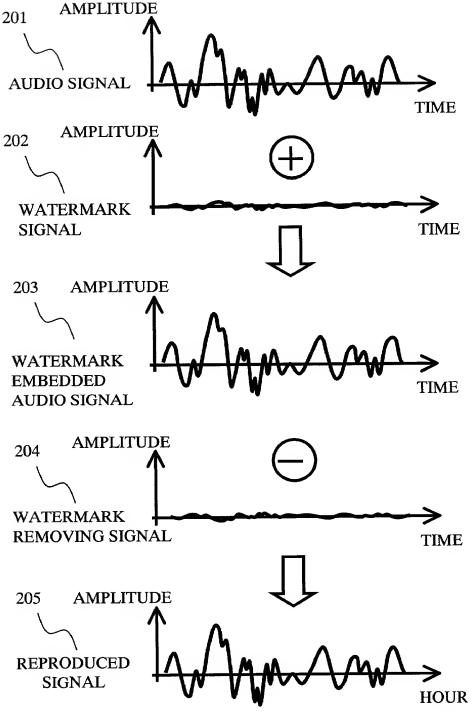

201
AMPLITUDE
AUDIO SIGNAL
TIME
202
AMPLITUDE
WATERMARK
SIGNAL
TIME
203
AMPLITUDE
WATERMARK
EMBEDDED
AUDIO SIGNAL
TIME
204
AMPLITUDE
WATERMARK
REMOVING SIGNAL
TIME
205
AMPLITUDE
REPRODUCED
SIGNAL
HOUR

FIG.3

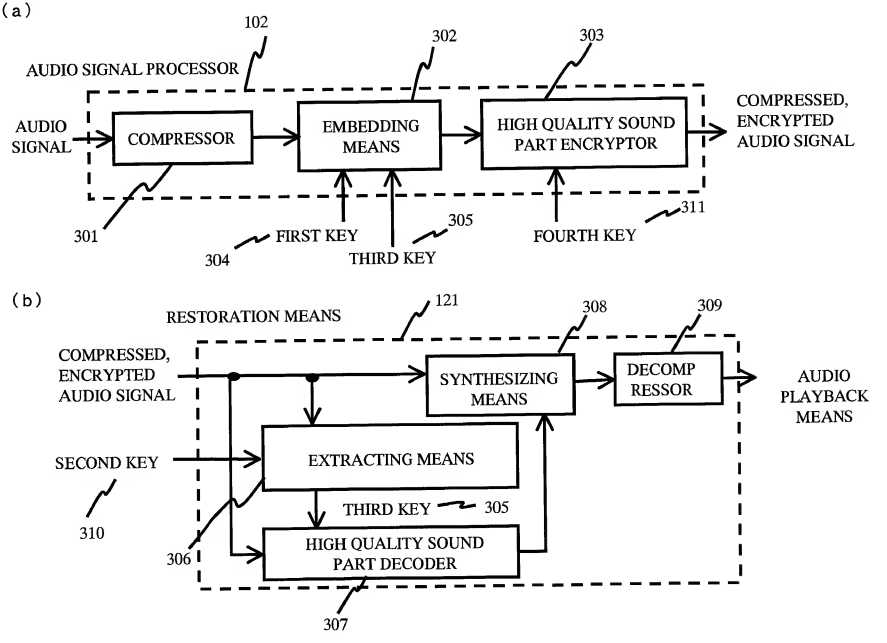
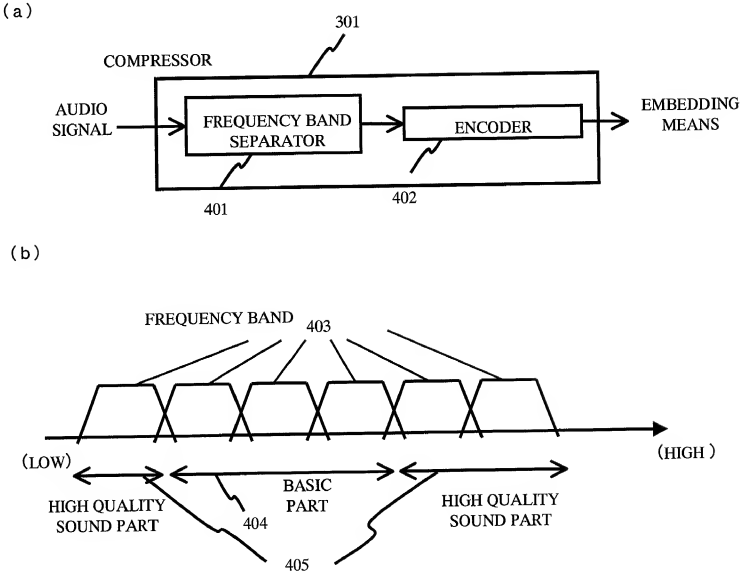

(a)
102
AUDIO SIGNAL PROCESSOR
302
303
AUDIO SIGNAL
COMPRESSOR
EMBEDDING MEANS
HIGH QUALITY SOUND PART ENCRYPTOR
COMPRESSED, ENCRYPTED AUDIO SIGNAL
301
304
FIRST KEY
THIRD KEY
305
FOURTH KEY
311
(b)
RESTORATION MEANS
121
308
309
COMPRESSED, ENCRYPTED AUDIO SIGNAL
SYNTHESIZING MEANS
DECOMP RESSOR
AUDIO PLAYBACK MEANS
SECOND KEY
EXTRACTING MEANS
310
THIRD KEY
305
306
HIGH QUALITY SOUND PART DECODER
307

FIG.4


(a)
301
COMPRESSOR
AUDIO SIGNAL
FREQUENCY BAND SEPARATOR
ENCODER
EMBEDDING MEANS
401
402
(b)
FREQUENCY BAND
403
(LOW)
(HIGH)
HIGH QUALITY SOUND PART
BASIC PART
HIGH QUALITY SOUND PART
404
405

T0Z180'HZETE660

FIG.5

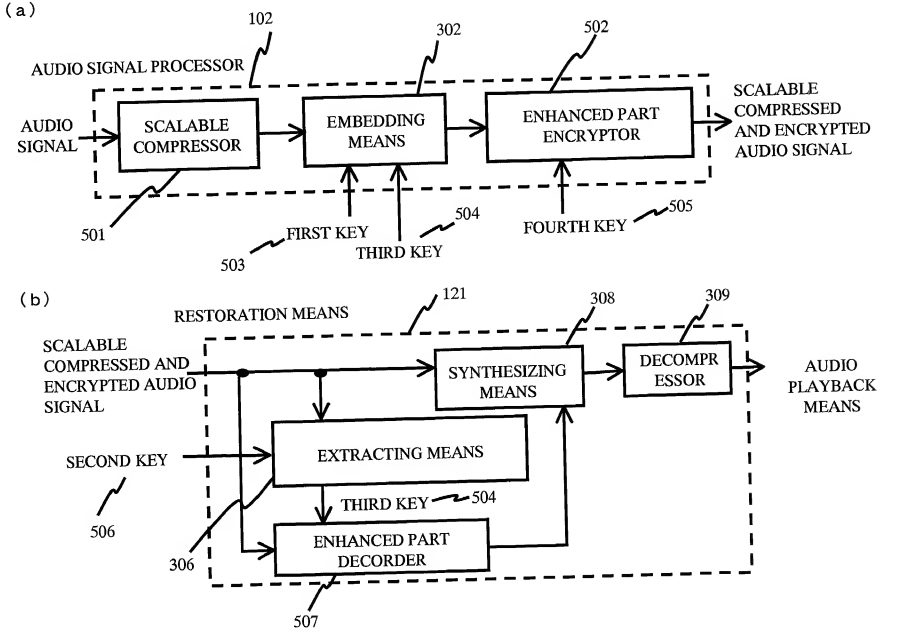


FIG.6

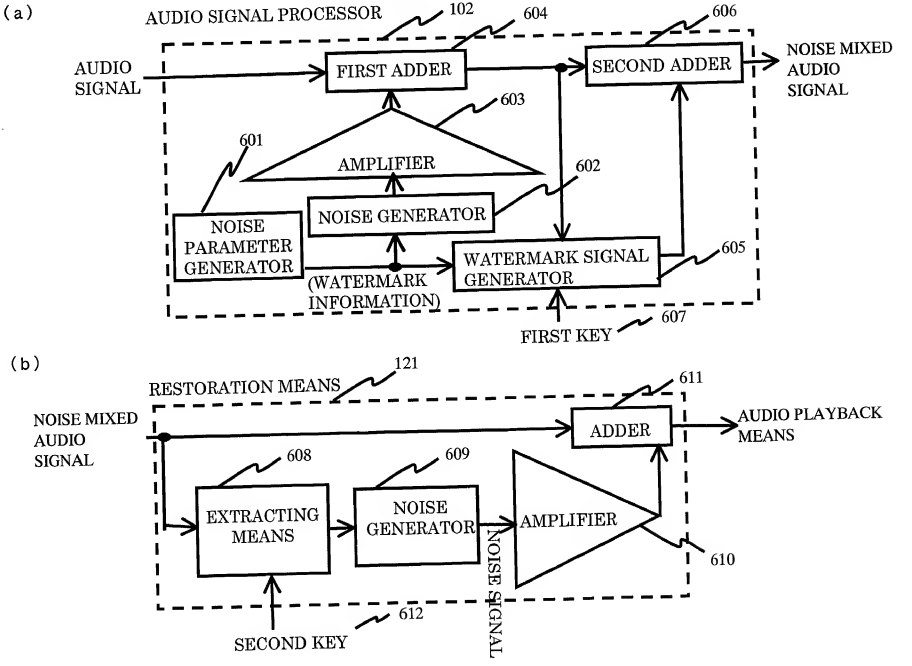
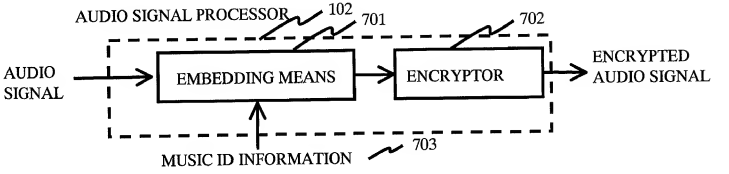

(a)
AUDIO SIGNAL PROCESSOR
102
604
606
AUDIO SIGNAL
FIRST ADDER
SECOND ADDER
NOISE MIXED AUDIO SIGNAL
603
601
AMPLIFIER
602
NOISE GENERATOR
NOISE PARAMETER GENERATOR
WATERMARK SIGNAL GENERATOR
605
(WATERMARK INFORMATION)
FIRST KEY
607
(b)
RESTORATION MEANS
121
611
NOISE MIXED AUDIO SIGNAL
ADDER
AUDIO PLAYBACK MEANS
608
609
EXTRACTING MEANS
NOISE GENERATOR
AMPLIFIER
610
NOISE SIGNAL
612
SECOND KEY

FIG.7

(a)


AUDIO SIGNAL PROCESSOR
102
701
702
AUDIO SIGNAL
EMBEDDING MEANS
ENCRYPTOR
ENCRYPTED AUDIO SIGNAL
MUSIC ID INFORMATION
703

(b)

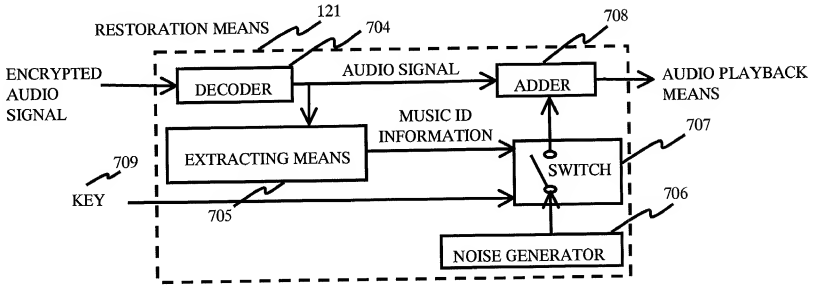

RESTORATION MEANS
121
704
708
ENCRYPTED AUDIO SIGNAL
DECODER
AUDIO SIGNAL
ADDER
AUDIO PLAYBACK MEANS
MUSIC ID INFORMATION
707
EXTRACTING MEANS
709
SWITCH
KEY
705
706
NOISE GENERATOR

FIG.8

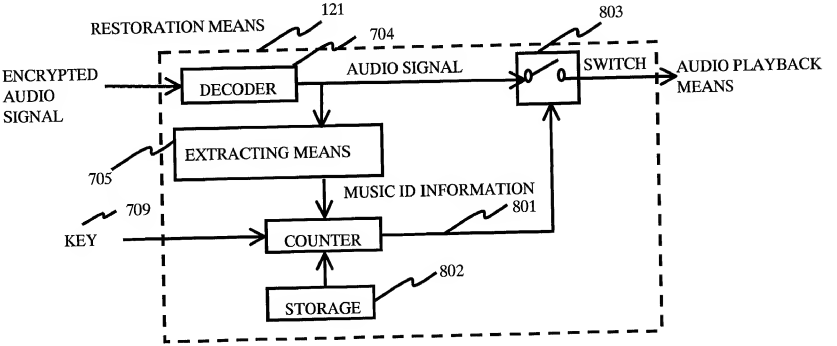

RESTORATION MEANS
121
704
803
ENCRYPTED AUDIO SIGNAL
DECODER
AUDIO SIGNAL
SWITCH
AUDIO PLAYBACK MEANS
EXTRACTING MEANS
705
MUSIC ID INFORMATION
709
KEY
COUNTER
801
802
STORAGE

FIG.9

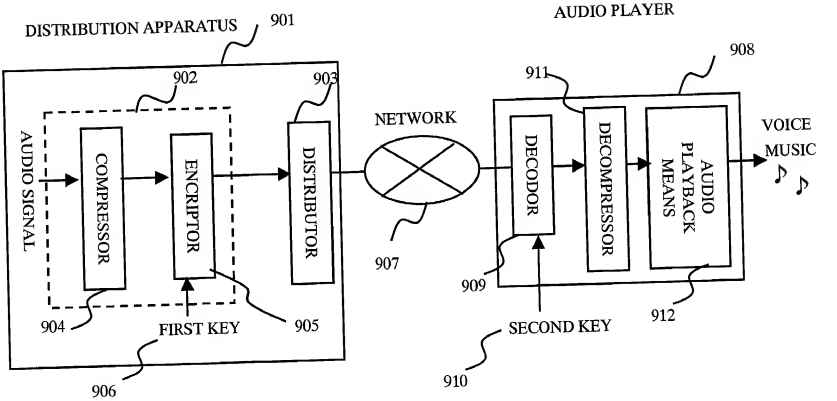

DISTRIBUTION APPARATUS
901
902
903
AUDIO SIGNAL
COMPRESSOR
ENCRIPTOR
DISTRIBUTOR
904
FIRST KEY
905
906
NETWORK
907
AUDIO PLAYER
908
911
DECODOR
DECOMPRESSOR
AUDIO PLAYBACK MEANS
VOICE
MUSIC
909
SECOND KEY
910
912

FIG.10

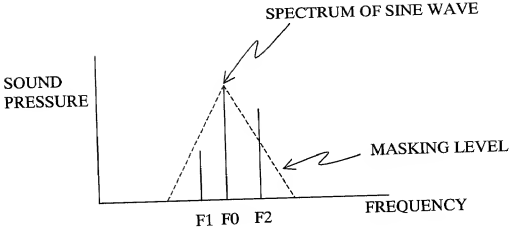
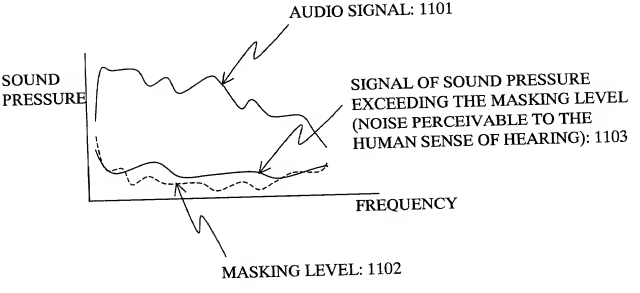

SPECTRUM OF SINE WAVE
SOUND
PRESSURE
MASKING LEVEL
FREQUENCY
F1 F0 F2

FIG.11


AUDIO SIGNAL: 1101
SOUND
PRESSURE
SIGNAL OF SOUND PRESSURE
EXCEEDING THE MASKING LEVEL
(NOISE PERCEIVABLE TO THE
HUMAN SENSE OF HEARING): 1103
FREQUENCY
MASKING LEVEL: 1102